WHAT IS CLAIMED IS:

1. A piezoelectric resonator made of a piezoelectric material, wherein the temperature coefficient ε_{TC} of the capacitance of the piezoelectric material, the bandwidth ratio $\Delta f/fo$, the temperature coefficient Fr_{TC} of the resonance frequency, the temperature coefficient Fa_{TC} of the anti-resonance frequency, and a target value α for the temperature coefficient of the center frequency satisfy the following expression:

$$|(Fr_{TC} + Fa_{TC})/2 + K \times \varepsilon_{TC} \times (\Delta f/fo)| \leq \alpha$$

where

K = a coefficient determined according to the impedance at the midpoint between Fr and Fa;

ε_{TC} = A × (the amount of change in capacitance in a measured temperature range) / (the capacitance at a reference temperature × the measured temperature range);

$\Delta f/fo$ = (Fa at the reference temperature - Fr at the reference temperature) / (fo at the reference temperature);

Fr_{TC} = A × (the amount of change in Fr in the measured temperature range) / (Fr at the reference temperature × the measured temperature range);

Fa_{TC} = A × (the amount of change in Fa in the measured temperature range) / (Fa at the reference temperature × the measured temperature range); and

A = a coefficient of +1 for a positive temperature coefficient and -1 for a negative temperature coefficient.

2. A piezoelectric resonator according to Claim 1, wherein α = 18 ppm/°C.

3. A piezoelectric resonator according to Claim 1, wherein K = 0.225.

4. An FM detection circuit comprising a bridge circuit that includes resistors connected on three sides thereof and a piezoelectric resonator according to Claim 1 connected on the remaining side, wherein an FM intermediate-frequency signal is input across one of two pairs of opposite nodes of the bridge circuit and an output is taken across the other of the two pairs of opposite nodes.

5. A piezoelectric resonator according to Claim 1, further comprising a strip-shaped thickness shear vibration mode piezoelectric element.

6. A piezoelectric resonator according to Claim 1, wherein the piezoelectric resonator defines a chip-type discriminator.

7. A piezoelectric resonator according to Claim 6, wherein the chip-type discriminator includes an insulating substrate, a frame-shaped insulating layer provided on the insulating substrate, electrodes provided on the insulating substrate, a piezoelectric element fixed to the electrodes via a conductive paste, a damping member provided on the piezoelectric element, and a metallic cap fixed on the insulating substrate via the frame-shaped insulating layer.

8. A piezoelectric resonator according to Claim 7, wherein the frame-shaped insulating layer is composed of glass paste.

9. A piezoelectric resonator according to Claim 7, wherein the damping member is composed of silicone rubber.

10. A piezoelectric resonator made of a piezoelectric material and sealed by a packaging resin, wherein the temperature coefficient ε_{TC} of the capacitance of the piezoelectric material, the bandwidth ratio $\Delta f/fo$, the temperature coefficient Fr_{TC} of the resonance frequency, the temperature coefficient Fa_{TC} of the anti-resonance frequency, the temperature coefficient Rfo_{TC} of the center frequency associated with a stress of the packaging resin, and a target value α for the temperature coefficient of the center

frequency satisfy the following expression:

$$|(Fr_{TC} + Fa_{TC})/2 + K \times \varepsilon_{TC} \times (\Delta f/fo) + Rfo_{TC}| \leq \alpha$$

where

K = a coefficient determined according to the impedance at the midpoint between Fr and Fa;

ε_{TC} = A × (the amount of change in capacitance in a measured temperature range) / (the capacitance at a reference temperature × the measured temperature range);

$\Delta f/fo$ = (Fa at the reference temperature - Fr at the reference temperature) / (fo at the reference temperature);

Fr_{TC} = A × (the amount of change in Fr in the measured temperature range) / (Fr at the reference temperature × the measured temperature range);

Fa_{TC} = A × (the amount of change in Fa in the measured temperature range) / (Fa at the reference temperature × the measured temperature range); and

A = a coefficient of +1 for a positive temperature coefficient and -1 for a negative temperature coefficient.

11. A piezoelectric resonator according to Claim 10, wherein α = 18 ppm/°C.

12. A piezoelectric resonator according to Claim 10, wherein K = 0.225.

13. An FM detection circuit comprising a bridge circuit with resistors connected on three sides thereof and a piezoelectric resonator according to Claim 10 connected on the remaining side, wherein an FM intermediate-frequency signal is input across one of two pairs of opposite nodes of the bridge circuit and an output is taken across the other of the two pairs of opposite nodes.

14. A piezoelectric resonator according to Claim 10, further comprising a strip-shaped thickness shear vibration mode piezoelectric element.

15. A piezoelectric resonator according to Claim 10, wherein the piezoelectric resonator defines a chip-type discriminator.

16. A piezoelectric resonator according to Claim 15, wherein the chip-type discriminator includes an insulating substrate, a frame-shaped insulating layer provided on the insulating substrate, electrodes provided on the insulating substrate, a piezoelectric element fixed to the electrodes via a conductive paste, a damping member provided on the piezoelectric element, and a metallic cap fixed on the insulating substrate.

17. A piezoelectric resonator according to Claim 16, wherein the frame-shaped insulating layer is composed of glass paste.

18. A piezoelectric resonator according to Claim 16, wherein the damping member is composed of silicone rubber.

19. A method of calculating a temperature coefficient of a piezoelectric resonator, wherein the temperature coefficient fo_{TC} of the center frequency is calculated according to the following approximate expression from the temperature coefficient ε_{TC} of the capacitance of the piezoelectric material, the bandwidth ratio $\Delta f/fo$, the temperature coefficient Fr_{TC} of the resonance frequency, and the temperature coefficient Fa_{TC} of the anti-resonance frequency:

$$fo_{TC} = (Fr_{TC} + Fa_{TC})/2 + K \times \varepsilon_{TC} \times (\Delta f/fo)$$

where

K = a coefficient determined according to the impedance at the midpoint between Fr and Fa;

ε_{TC} = A × (the amount of change in capacitance in a measured temperature range) / (the capacitance at a reference temperature × the measured temperature range);

$\Delta f/fo$ = (Fa at the reference temperature - Fr at the reference temperature) / (fo at the reference temperature);

Fr_{TC} = A × (the amount of change in Fr in the measured temperature range) / (Fr at the reference temperature × the measured temperature range);

Fa_{TC} = A × (the amount of change in Fa in the measured temperature range) / (Fa at the reference temperature × the measured temperature range); and

A = a coefficient of +1 for a positive temperature coefficient and -1 for a negative temperature coefficient.

20. A method of calculating a temperature coefficient of a piezoelectric resonator according to Claim 19, wherein K = 0.225.

21. A method of calculating a temperature coefficient of a piezoelectric resonator sealed by a packaging resin, wherein the temperature coefficient fo_{TC} of the center frequency is calculated according to the following approximate expression from the temperature coefficient ε_{TC} of the capacitance of the piezoelectric material, the bandwidth ratio $\Delta f/fo$, the temperature coefficient Fr_{TC} of the resonance frequency, the temperature coefficient Fa_{TC} of the anti-resonance frequency, and the temperature coefficient Rfo_{TC} of the center frequency associated with a stress of the packaging resin:

$$fo_{TC} = (Fr_{TC} + Fa_{TC})/2 + K \times \varepsilon_{TC} \times (\Delta f/fo) + Rfo_{TC}$$

where

K = a coefficient determined according to the impedance at the midpoint between Fr and Fa;

ε_{TC} = A × (the amount of change in capacitance in a measured temperature range) / (the capacitance at a reference temperature × the measured temperature range);

$\Delta f/fo$ = (Fa at the reference temperature - Fr at the reference temperature) / (fo at the reference temperature);

Fr_{TC} = A × (the amount of change in Fr in the measured temperature range) / (Fr at the reference temperature × the measured temperature range);

Fa_{TC} = A × (the amount of change in Fa in the measured temperature range) / (Fa at the reference temperature × the measured temperature range); and

A = a coefficient of +1 for a positive temperature coefficient and -1 for a negative temperature coefficient.

22. A method of calculating a temperature coefficient of a piezoelectric resonator according to Claim 21, wherein K = 0.225.